IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx EESF 21.0014X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2021-06-16		
Applicant:	**Neles Finland Oy** Vanha Porvoontie 229 P.O. Box 304 Vantaa FI-01301 **Finland**		
Equipment:	**Intelligent Valve Controller NDX_ _ _0, NDX_ _ _1 and NDX_ _ _2**		
Optional accessory:	n/a		
Type of Protection:	**Intrinsically Safe or Increased safety**		
Marking:	**Ex ia IIC T6…T4 Ga** **Ex ia IIIC T_{200}85 °C…T_{200}115 °C Da** **Ex ib IIC T6…T4 Gb** **Ex ib IIIC T_{200}85 °C…T_{200}115 °C Db** **Ex ic IIC T6…T4 Gc** **Ex ic IIIC T85 °C…T115 °C Dc** **Ex ec IIC T6…T4 Gc** **IP66**		

Approved for issue on behalf of the IECEx Certification Body: **Tony Myllylä**

Position: **Senior Expert**

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Eurofins Expert Services Oy
Kivimiehentie 4
FI-02150 Espoo
Finland

eurofins | Expert Services

IECEx Certificate of Conformity

Certificate No.: **IECEx EESF 21.0014X** Page 2 of 4

Date of issue: 2021-06-16 Issue No: 0

Manufacturer: **Neles Finland Oy**
Vanha Porvoontie 229
P.O. Box 304
Vantaa FI-01301
Finland

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

FI/EESF/ExTR21.0016/00

Quality Assessment Report:

NO/DNV/QAR09.0008/11

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

NDX valve positioners are intended for linear or rotary travel control valves. The NDX monitors valve position and controls the actuator of the device. NDX is connected to a control system (DCS) via 4 – 20 mA current loop which provides power supply to NDX and data communication between NDX and DCS utilizing HART communication protocol. The NDX includes floating 4 – 20 mA current transmitter/sink interface that can be used for indicating the valve position to the control system. Current loop for power supply and HART communication (mA loop) and current loop for Position Transmitter (PT loop) are separate I.S. circuits. NDX_ _ _1 and NDX_ _ _2 variant incorporates two current transmitter/sink interfaces complying with NAMUR standard.

The NDX produces pneumatic control signal for the actuator and monitors the pressure of air supply and actuator channel for diagnostic purposes. For valve position sensing, the NDX uses contactless measurement method based on sensing the direction of the magnetic field created by a target magnet on the valve shaft.

The NDX enclosures are made of cast aluminium and plastic (NDX_ _ _0/1) or cast aluminium entirely (NDX_ _ _2). LUI (Local User Interface) with LCD display and capacitive keypad is intended for controlling and monitoring valve and positioner operation locally.

Prestage unit in the device converts the electronic control signal from the main board to pneumatic control signal for the actuator.

The enclosure provides type of protection IP66 in accordance with IEC 60079-0.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The maximum allowed ambient temperature ranges for levels of protection "ia" and "ib" according to different T Classes are:
   - Tamb -40 °C … +50 °C for temperature class T6 (IIC) or T_{200}85 °C for dust (IIIC)
   - Tamb -40 °C … +65 °C for temperature class T5 (IIC) or T_{200}100 °C for dust (IIIC)
   - Tamb -40 °C … +80 °C for temperature class T4 (IIC) or T_{200}115 °C for dust (IIIC)
2. The maximum allowed ambient temperature ranges for levels of protection "ic" and "ec" according to different T Classes are:
   - Tamb -40 °C … +50 °C for temperature class T6 (IIC) or T_{200}85 °C for dust (IIIC)
   - Tamb -40 °C … +65 °C for temperature class T5 (IIC) or T_{200}100 °C for dust (IIIC)
   - Tamb -40 °C … +85 °C for temperature class T4 (IIC) or T_{200}115 °C for dust (IIIC)
3. The permissible ambient temperature range depends on the used configuration. The ambient temperature range is marked on the identification plate.
4. At an ambient temperature ≥ +70 °C, the temperature rating of the connection cable shall be in accordance with maximum ambient temperature range.
5. Temperature Classes for dust are based on measurement w.r.t. total immersion to dust required for EPL Da equipment.
6. The valve controller shall be connected according to the manufacturer's instructions.
7. The impact test of NDX_ _ _0 enclosure was made according to low risk of mechanical danger. The device shall be protected from high-level impacts.
8. The plastic covers in the NDX _ _ _ 0 and NDX_ _ _1 enclosures shall be wiped with damp cloth only due to risk of electrostatic charging.
9. Selected cable glands shall conform to requirements of IEC 60079-0.
10. For Level of Protecton "ec" provision shall be made to provide the transient protection at a level not exceeding 40% of the rated supply voltage.

IECEx Certificate of Conformity

Equipment (continued):

The maximum input values of the NDX mA and PT loop interfaces are:

$U_i \leq 28$ V

$I_i \leq 120$ mA

$P_i \leq 1$ W

$C_i < 3.7$ nF

$L_i < 10.9$ µH

The maximum input values of NAMUR-DO1 and NAMUR-DO2 interfaces in NDX_ _ _1 and NDX_ _ _2 are:

Ui ≤ 16 V

Ii ≤ 25 mA

Pi ≤ 100 mW

Ci < 23.4 nF

Li < 27.8 µH

The maximum input values for type of protection “ec” are:

U ≤ 28 V (mA and PT loop interfaces)

U ≤ 16 V (NAMUR-DO1 and NAMUR-DO2 interfaces)

Annex:

Annex to IECEx EESF 21.0014X.pdf

Annex to IECEx EESF 21.0014X

NDX TYPE CODING

1. sign	**PRODUCT GROUP**
NDX	Neles Intelligent Valve Controller Series NDX
2. sign	**PNEUMATIC ACTION**
1	Single Acting
2	Double Acting (Available with 5. sign 2, 5. sign 1)
3. sign	**PNEUMATIC CAPACITY**
5	Normal Capacity (80 Nm3/h)
4. sign	**FAIL ACTION**
1	Fail safe
5. sign	**ENCLOSURE**
0	Compact - Aluminum with composite cover (Available with 2. sign 1)
1	Standard - Aluminum with composite cover
2	Flameproof/Explosion Proof - Aluminum
6. sign	**COMMUNICATION / INPUT SIGNAL RANGE**
H	4-20 mA with HART
T	4-20 mA with HART + PT
N	4-20 mA (no HART)
M	4 - 20 mA + PT (no HART)
D	4-20 mA with HART + 2 x DO (Available with 5. sign 2., 5. sign 1)
L	4-20 mA with HART + PT + DO (Available with 5. sign 2., 5. sign 1)
7. sign	**TEMPERATURE RANGE**
G	General: -40..+85 °C
8. sign	
-	Standard; Ex i & I/O extension capable
/	Optional; Non-exi, not I/O extension capable (Available with 5. sign 1 and 2)
9. sign	**APPROVALS FOR HAZARDOUS AREAS (1/2)**
N	No approval
X	ATEX / IECEx Ex i certification (Not available with 8. sign /)
E	ATEX / IECEx Ex d certification (Available with 5. sign 2)
U	cCSAus Ex i certification (Not available with 8. sign /)
F	cCSAus Ex d certification (Available with 5. sign 2)
C	CCC (China) Ex i certification
D	CCC (China) Ex d certification (Available with 5. sign 2)
Z	Inmetro (Brazil) Ex i certification
B	Inmetro (Brazil) Ex d certification
P	CCOE (India) Ex i certification
I	CCOE (India) Ex d certification
W	KOSHA (Korea) Ex i certification (Available with 5. sign 0 and 2)
K	KOSHA (Korea) Ex d certification (Available with 5. sign 2)
T	Japan Ex i certification
J	Japan Ex d certification (Available with 5. sign 2)
S	GOST (Russia) Ex i certification (Available with 5. sign 0 and 2)
R	GOST (Russia) Ex d certification (Available with 5. sign 2)
10. sign	**APPROVALS FOR HAZARDOUS AREAS (2/2)**
N	No approval
X	ATEX / IECEx Ex i certification (Not available with 8. sign /)
E	ATEX / IECEx Ex d certification (Available with 5. sign 2)
U	cCSAus Ex i certification (Not available with 8. sign /)
F	cCSAus Ex d certification (Available with 5. sign 2)
C	CCC (China) Ex i certification
D	CCC (China) Ex d certification (Available with 5. sign 2)
Z	Inmetro (Brazil) Ex i certification
B	Inmetro (Brazil) Ex d certification
P	CCOE (India) Ex i certification
I	CCOE (India) Ex d certification
W	KOSHA (Korea) Ex i certification (Available with 5. sign 0 and 2)
K	KOSHA (Korea) Ex d certification (Available with 5. sign 2)
T	Japan Ex i certification
J	Japan Ex d certification (Available with 5. sign 2)
S	GOST (Russia) Ex i certification (Available with 5. sign 0 and 2)
R	GOST (Russia) Ex d certification (Available with 5. sign 2)
11. sign	**PNEUMATIC CONNECTIONS & GAUGES**
0	1/4 NPT without gauges (no block, no gauges)
1	1/4 NPT with gauges (block with 1/4 NPT threads+ gauges)
2	G1/4 without gauges (block with G1/4 threads)
3	G1/4 with gauges (block with G1/4 threads + gauges)
12. sign	**VARIANT**
N	Neles
C	Neles, Chinese ID plates (for non-approval version)
L	Neles, without Local User Interface
V	VVC Brand labeled (Applicable to 5. sign "0")
13. sign	**DIAGNOSTICS**
0	Standard diagnostics
1	Advanced diagnostics
14. sign	**SPECIAL VERSION**
0	None
W	Cover without window for flameproof/explosion proof enclosure
15. sign	**RESERVED (I/O EXTENSION)**
0	None
16. sign	**RESERVED**
0	None
17. sign	
-	Characters 18-20 received for partner identification
* * *	Partner's identification – shall not affect hazardous area approvals
	Special feature – shall not affect hazardous area approvals

NDX	2	5	1	2	T	G	-	X	N	0	N	0	0	0	0	-	6	6	8	Y	SAMPLE MODEL CODE (Char = 21)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	